

DOCUMENT RESUME

ED 280 229

EC 192 130

AUTHOR Keenan, P. A.; Lachar, David
TITLE Screening Preschoolers with Special Problems: Use of the Personality Inventory for Children (PIC).
PUB DATE Aug 85
NOTE 24p.; Paper presented at the Meeting of the American Psychological Association (Los Angeles, CA, August 23-27, 1985). Light print may affect legibility.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Emotional Disturbances; *Handicap Identification; *Learning Disabilities; *Parent Participation; *Personality Measures; Preschool Education; Questionnaires; *Screening Tests; Test Reliability; Test Validity
IDENTIFIERS *Personality Inventory for Children

ABSTRACT

The Personality Inventory for Children (PIC) is an objectively scored, multidimensional measure of child and adolescent behavior, affect, and cognitive ability and can be completed by parents. The overall goal of this project was to evaluate the psychometric characteristics of the PIC as a screening device for use with preschool populations. The project consisted of two studies. The first study assessed the utility of the PIC profile scales with 120 3- to 5-year-olds attending a therapeutic preschool for learning disabled and emotionally disturbed children and with 43 preschool children not identified as needing special services. The second study examined the correlation between PIC scale scores and teacher ratings with 10 handicapped preschool children and 23 children in Head Start. Appropriate PIC scales were found to correlate significantly with teacher ratings as well as with measures of intelligence and language ability, suggesting both convergent and discriminate validity. Regression analysis correctly classified 92% of the sample. Temporal stability of the PIC was also established as 31 mothers completed the PIC twice (average time between testings 2 weeks). The studies suggest the effectiveness of parent informants in screening children to assess the need for special education services. (Author/DB)

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Screening Preschoolers

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Screening Preschoolers with Special Problems:
Use of the Personality Inventory for Children (PIC)

P. A. Keenan

Wayne State University

David Lachar

Institute of Behavioral Medicine

Good Samaritan Medical Center

Phoenix, Arizona

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Abstract

A precise and simple screening device completed by the parent would be valuable to identify children in need of special education services. Personality Inventory for Children (PIC) profiles of 153 normal and impaired preschoolers were studied. Appropriate PIC scales were found to correlate significantly with teacher ratings as well as with measures of intelligence and language ability, suggesting both convergent and discriminant validity. Regression analysis correctly classified 92% of the sample. Temporal stability of the PIC was also established for preschool children. These studies suggest the effectiveness of parent informants in screening children to assess the need for special education services.

Screening Preschoolers with Special Problems

Use of the Personality Inventory for Children (PIC)

There is much recent evidence that the recognition of children at risk for future social and academic problems is not only helpful, but essential as long as the appropriate intervention is provided. In addition, previous beliefs that problems of early childhood are poor predictors of adjustment problems in adulthood are being disproven. Early social withdrawal appears to be predictive of poor school achievement (Victor & Halverson, 1976); children with severe aggressive and antisocial behaviors frequently exhibit similar patterns of behavior as adults (Morris, 1956; Robins, 1966); and, untreated, hyperactivity appears to be a chronic problem throughout life with difficulties in concentration and impulse control persisting into adulthood (Barkley, 1981; Ross & Ross, 1976). Detection of children with language, cognitive, developmental, motor skills, and school performance deficits should be given a high priority. According to Mash and Terdal (1981), failure to take early corrective action will result in cumulative deficits with the child falling even farther behind. Early recognition may well facilitate appropriate intervention.

Screening at a gross level can help to determine whether a problem exists in a general sense. Results can then lead to a more precise evaluation to determine the nature of the problem, and, in turn, hypotheses can be generated with respect to potential intervention and treatment settings. The method of choice with which to screen for

children in need of such in-depth assessment has traditionally been the use of parent and teacher rating forms. Few rating scales exist exclusively for use with a preschool population. The Personality Inventory for Children (PIC; Wirt, Lachar, Klinedinst, & Seat, 1984) is an objectively scored, multidimensional measure of child and adolescent behavior, affect, and cognitive ability. The administration booklet provides 600 true-false items that can be completed in lengths of 131, 280, and 420 items by child guardians, who are usually mothers, to provide sets of profile scales, critical items, and other indices. All PIC scales are normed separately by sex for ages 3 to 5 years (preschool) and 6 to 16 years. The Intellectual Screening (IS) and Cognitive Development (IV) scales are scored using separate norms for 6-, 7-, 8-, 9-, and 10+ -year-olds. The original scales, constructed using either an empirical or rational/content scale construction strategy, include three scales that measure informant response set, Lie (L), Frequency (F), and Defensiveness (DEF); a general screening scale, Adjustment (ADJ); and 12 substantive scales, Achievement (ACH), Intellectual Screening (IS), Development (DVL), Somatic Concern (SOM), Depression (D), Family Relations (FAM), Delinquency (DLQ), Withdrawal (WDL), Anxiety (ANX), Psychosis (PSY), Hyperactivity (HPR), and Social Skills (SSK). Completion of the first 131 items of this inventory provides the scores from four factor-derived broad-band scales, Undisciplined/Poor Self-Control (I), Social Incompetence (II), Internalization/Somatic Symptoms (III), and Cognitive Development (IV). Completion of the first 280 items provides scores for shortened versions ("-S") of the profile scales.

Several validation studies of individual PIC scales are summarized in the test manuals (Wirt et al., 1984; Lachar, 1982) and in a recent chapter (Lachar, Kline, & Boersma, 1986). Recent studies have successfully applied the PIC to the study of hyperactivity (Forbes, 1985) and cognitive dysfunction (Kline, Lachar, & Sprague, 1985) and have presented the development and application of a profile typology derived from cluster analysis (Gdowski, Lachar, & Kline, 1985; Kline, Lachar, & Gdowski, in press).

The overall goal of this project was to evaluate the psychometric characteristics of the PIC as a screening device for use with preschool populations. This study investigated whether the present interpretive guidelines for the PIC profile scales (Lachar & Gdowski, 1979) do accurately identify atypical cognitive development and problematic affect and behavior in young children. In addition, evidence of concurrent validity and temporal stability was sought for the PIC scales.

Study 1

Method

Subjects

In order to assess the utility of the PIC profile scales, testing results of 120 3- to 5-year-olds attending The Child's Place preschool in Windsor, Ontario, were obtained. The Child's Place is a therapeutic preschool for emotionally- and learning-disabled children. In addition to the clinical population, The Child's Place also enrolls a percentage of students who have no demonstrated need for psychological intervention or special education support services.

Seventy-seven children, 55 boys and 22 girls with a mean age of 48.1 months, constituted the clinical sample. The remaining 43 subjects, 25 boys and 18 girls, were part of the integration population at The Child's Place and served as the nonclinical sample; their mean age was 44.7 months.

Procedure

The McCarthy Scales of Children's Abilities were administered to all children by the staff psychologist as part of the screening process. Either a General Cognitive Index (GCI) or an estimated GCI was obtained for each child. In addition, the Peabody Picture Vocabulary Test (PPVT) and either the Reynell Developmental Language Test or the Utah Test of Language Development was administered and scored by the staff speech pathologist. Full-length (420-item) PIC protocols were obtained from the mother of each child within 21 days after notification of the child's admission to either the normative or clinical program. Pearson product moment correlation coefficients were calculated between PIC scale T-scores and each criterion measure of intelligence or language ability. In order to evaluate the relative ability of each of the PIC scales to differentiate subjects on the basis of group membership, a step-wise linear discriminant function analysis was employed. In addition, descriptive and nonparametric statistics were applied to compare group performance on individual PIC scales.

Results

Table 1 demonstrates that the means of the PIC profile scales were significantly different ($p \leq .01$) between the impaired and normal groups except on HPR. The proportion of scale elevations in the clinical range

was significantly greater for the impaired preschool sample for all scales except HPR (see Table 2). In addition, the impaired sample had on average a significantly greater number of clinical scale elevations per profile ($M = 5.23$, $SD = 2.86$) than did the control group ($M = 0.63$, $SD = 0.79$; $\chi^2(118) = 10.33$, $p \leq .0001$).

A step-wise linear discriminant analysis demonstrated that group membership could be differentiated on the basis of a weighted combination of the selected profile scales ($\chi^2(8) = 108.21$, $p \leq .00001$). The associated classification analysis of an optimal eight-variable model (PSY, FAM, IS, SOM, D, DLQ, WDL, ACH) resulted in an overall correct classification rate of 92.5%, with all normals and 68 of 77 impaired preschoolers accurately assigned. A more simplistic approach that assigned profiles with two or more scales in the "clinical range" to the impaired category resulted in a sample classification rate of 90.8% (37/43 normals, 72/77 impaired).

Insert Tables 1 & 2 about here

The pattern of coefficient values obtained from correlational analyses of the PIC scale scores with the criterion measures of intelligence and language ability provided evidence for both convergent and discriminant validity of the PIC (see Table 3). Scores on all of the PIC scales that form the Cognitive Triad (ACH, IS, DVL) correlated negatively and significantly with scores on the PPVT, Utah Test of Language Development, and the Reynell Developmental Language Test, as well as the GCIs and estimated GCIs of the McCarthy Scales. The greatest

overall predictor of school performance was DVL, which obtained a median correlation of $-.71$ with the cognitive estimates obtained through individual assessment of normal and impaired preschoolers. The IS scale correlated higher with measures of intelligence than with measures of language ability. Correlations obtained for the total sample were equally strong between all measures and ACH.

Insert Table 3 about here

Of the noncognitive profile scales, only PSY appeared to consistently relate to measures of child cognitive ability. Although language measures and the PPVT appear to relate to a variety of PIC dimensions, these results disappear when the sample is restricted to impaired subjects. This effect suggests that speech development and receptive language served to identify impaired versus normal children and therefore the relation between a variety of measures of child maladjustment on the PIC and these speech and language measures are a product of sample selection procedures.

Study 2

Method

Subjects

A second sample of preschoolers from a midwestern suburb was used to examine the relation between PIC scale scores and teacher ratings. All of the subjects attended either special education classes or a Head Start program.

Special education children were identified through an intake process with a psychologist and a speech and language therapist in attendance. Head Start children were selected from families who were receiving welfare or Aid to Dependent Children. By law, at least 10% of Head Start children had previously been identified as handicapped. The mean age of the 20 boys and 13 girls who were evaluated in this study was 54.3 months. Ten of the preschoolers were attending special education classes and 23 were from the Head Start program.

Procedure

Revised format PIC administration booklets were mailed to participating mothers with instructions for them to complete the first 280 items. Each child's teacher completed the School Behavior Checklist (SBC; Miller, 1981). PIC and SBC scale scores were correlated.

Twenty-four mothers from Study 2 completed the PIC short form a second time to provide an estimate of scale score temporal stability. This sample was increased to 31 by the addition of 7 mothers from the Study 1 sample who completed the PIC twice. The average time between testings was two weeks.

Results

Further supportive evidence for the convergent and discriminant validity of the PIC is found in the comparison of parent and teacher ratings displayed in Table 4. The SBC Cognitive Deficit scale correlated significantly ($p \leq .01$) with PIC scales ACH-S, IS-S, and DVL. The SBC Low Need Achievement scale correlated highly with PIC scales IV, IS-S, and DVL. In addition, SBC School Disturbance correlated significantly with ACH-S, DVL, and IV.

Insert Tables 4 & 5 about here

The SBC Agression scale correlated significantly with PIC measure- of externalizing psychopathology and general maladjustment (I, ADJ-S, FAM-S, DLQ-S, HPR-S), while the SBC Hostile Isolation scale correlated highly with PIC measrues of internalizing psychopathology and general maladjustment (II, III, ADJ-S, D-S, WDL-S). Furthermore, teacher-derived ratings of Externalization were related to HPR, and the SBC Total Disability scale correlated highly with three of the four PIC factor scales, ADJ-S, and five of 12 profile scales (ACH-S, DVL, D-S, WDL-S, PSY-S). In this analysis the PIC WDL-S scale performed as a general measure of poor adjustment, correlating with seven of nine SBC teacher rating dimensions.

All test-retest correlation coefficients ranged from .77 to .92 with the exception of DEF-S (.31) and SOM-S (.59) (see Table 5). Applying the Lachar and Gdowski (1979) classification rules to determine normal versus clinical range T-score elevations, the overall classification agreement between the two administrations for all scales was 89.4%. Only three of 20 scales obtained agreement rates less than 85%.

Discussion

The conclusion that the PIC is an effective preschool screening device received considerable support from studies of classification, concurrent validity, and test-retest reliability. Almost without exception, significant differences were found between the clinical scale means of the groups studies. In addition, examination of the PIC

scales as a summary variable revealed marked differences between impaired and normal children. This observation is in keeping with the finding that deviant behavioral characteristics tend to coexist, or pattern in children (Achenbach & Edelbrock, 1978; Gdowski, Lachar, & Kline, 1985).

The results of a classification analysis were also encouraging. Using two or more scale elevations in the clinical range to determine the presence of impairment, 30% more clinical cases were correctly classified than would be predicted by base rate values, and an improvement of 51% over base rates was obtained when classifying the profiles of normal subjects.

In general, the support for the convergent and discriminant validity of the PIC was quite evident. DVL attained the highest correlations with all external measures, suggesting that it may be the best single measure of intellectual and language development deficits in preschoolers. Durrant (1983) also found the DVL scale to be the most accurate reflection of overall intellectual capacity as well as the best predictor of receptive vocabulary, and DeMoor-Peal and Handal (1983) found a correlation of $-.67$ between DVL and a prorated IQ within a preschool population. The finding of an elevated DVL in a preschool population may be sufficient evidence to justify a more detailed individual assessment of language and intellectual ability. The PIC-to-cognitive-measure correlation matrix presented in Table 3 supports the interpretive intent of the Cognitive Triad scales (ACH, IS, DVL) and is consistent with previous studies using older children (Dollinger, Goh, & Cody, 1984; Kline et al., 1985).

These data demonstrated evidence that parents and teachers agreed on, the level of child academic ability and performance. The pattern of agreement between parent and teacher on the degree and type of behavioral or emotional problem was less straightforward. Behavioral excesses or "acting out" behaviors were more strongly agreed upon than were internalizing behaviors. This observation was also made by Miller in reporting upon the relation between parent and teacher ratings of young children (Miller, 1981; p. 7). Block (1972) suggested that behavioral excesses maintain their consistency across situations, while behavioral deficits appear to be situation-specific. Although parents and teachers may not agree completely on the individual characteristics of behavioral problems manifested by the children studied, they do seem to agree in identifying those children who are experiencing maladjustment. The children to whom teachers assigned high scores on the SBC Total Disability scale also obtained clinical range elevations on the PIC screening scale, ADJ.

Although nearly all handicapped children will be identified at some time during their public school experience, corrective efforts have a greater possibility of effect during the earlier years (Reynolds, 1979). The need to identify these children appears to outweigh the potential negative effects of labeling. The PIC offers much promise as the measure of choice with which to identify these children.

Author Notes

The authors wish to thank William V. McDermott, Marion Smith, and Howard Heitzeg for assistance in facilitating subject participation and data collection.

Requests for reprints should be sent to David Lachar, Institute of Behavioral Medicine, Good Samaritan Medical Center, 1111 E. McDowell Rd./ P. O. Box 2989, Phoenix, AZ 85062.

Table 1

PIC Profile Scale Means and Standard Deviations for Impaired and Normal Preschool Children

Scale	Impaired (n = 77)		Normal (n = 43)		<u>t</u>
	M	SD	M	SD	
L	49.08	9.10	52.60	10.82	1.88
F	82.99	21.65	54.16	8.70	8.29**
DEF	45.61	11.60	49.79	11.53	1.88
ADJ	76.96	18.46	51.28	7.21	8.68**
ACH	72.06	17.40	50.65	7.76	7.59**
IS	73.97	16.80	57.40	9.84	5.87**
DVL	73.18	16.56	50.72	9.77	8.07**
SOM	67.05	16.47	51.58	9.90	5.57**
D	66.64	17.46	49.00	8.53	6.17*
FAM	61.17	13.87	46.65	5.12	6.56**
DLQ	63.79	16.58	50.23	8.56	4.96**
WDL	65.42	15.12	49.77	7.88	6.27**
ANX	59.08	13.12	50.63	9.10	3.72**
PSY	87.53	20.64	54.93	10.84	9.56**
HPR	50.27	14.48	49.91	8.29	0.15
SSK	67.30	14.55	50.63	7.15	6.99**

**
p < .01

TABLE 2 . Proportion of Clinical Range Scale Elevations for Normal and Impaired Preschoolers within a Therapeutic Nursery Program.

Scale	Rule	Normal Controls (<u>n</u> =43)	Impaired Clients (<u>n</u> =77)	$\chi^2(1)$	p
L	>59T	37%	0%	36.36	.001
F	>99T	0	21	8.59	.01
DEF	>69T	7	0	--	--
ADJ	>59T	12	77	46.83	.001
ACH	>59T	9	69	36.86	.001
IS	>69T	5	62	35.44	.001
DVL	>59T	16	78	42.52	.001
SOM	>69T	7	36	10.95	.001
D	>69T	2	39	17.46	.001
FAM	>59T	0	51	29.99	.001
DLQ	>79T	0	19	7.88	.01
WDL	>69T	5	32	10.70	.01
ANX	>69T	2	19	5.62	.05
PSY	>79T	2	58	34.42	.001
HPR	>59T	12	25	2.93	ns
SSK	>69T	2	36	15.63	.001

Table 3

Significant Correlations Between PIC Scales and Cognitive Measures for Total and Impaired-Only Preschool Samples

	Est GCI	McCarthy GCI	Total	Reynell Exp Lang	Verb Comp	Utah Language	PPVT
$\underline{n}_1$ ($\underline{n}_2$) ^a	43 (18)	36 (34)	79 (52)	43 (27)	43 (27)	56 (31)	88 (56)
PIC							
ACH	64 ^b (--)	50 (44)	62 (48)	53 (--)	60 (--)	62 (--)	56 (40)
IS	71 (69)	63 (61)	69 (63)	44 (--)	-- (--)	53 (--)	56 (43)
DVL	71 (70)	71 (66)	74 (67)	62 (50)	66 (58)	71 (47)	70 (62)
SOM	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	35 (--)	-- (--)
D	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	41 (--)	36 (--)
FAM	-- (--)	-- (--)	-- (--)	45 (--)	-- (--)	34 (--)	30 (--)
DLQ	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	42 (--)	35 (--)
WDL	46 (--)	-- (--)	36 (--)	43 (--)	-- (--)	55 (--)	43 (--)
ANX	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	34 (--)	-- (--)
PSY	49 (--)	47 (--)	56 (--)	43 (--)	-- (--)	65 (--)	60 (44)
HPR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SSK	-- (--)	-- (--)	39 (--)	-- (--)	-- (--)	52 (--)	55 (42)

^a $\underline{n}_1$ = total sample, $\underline{n}_2$ = impaired-only sample

^bAll correlations are negative and significant at $p \leq .01$. Decimals are omitted.

Table 4

Correlation Coefficients (N=33) Between Scales of the PIC and School Behavior Checklist

PIC Scale	School Behavior Checklist Scale								
	CD	NI	SD	LNA	AGG	ANX	HI	EXT	TD
I	-- ^a	--	.57**	--	.49**	--	--	--	.40*
II	--	--	--	--	--	.37*	.35*	--	.36*
III	--	--	--	--	--	--	.40*	--	--
IV	--	--	.51**	.40*	--	--	--	--	.38*
ADJ-S	.38*	--	.69**	.40*	.58**	--	.41*	--	.58*
ACH-S	.44**	--	.39*	--	--	--	--	--	.35*
IS-S	.43*	--	--	.49**	--	.36*	--	--	--
DVL	.47**	.46**	.50**	.43*	--	--	--	--	.47**
SOM-S	--	--	--	--	--	--	--	--	--
D-S	--	--	--	--	--	--	.41*	--	.38*
FAM-S	--	--	--	--	.44**	--	--	--	--
DLQ-S	--	--	--	--	.45**	--	--	--	--
WDL-S	.40*	.47**	.39*	.57**	--	.38*	.47**	--	.58**
ANX-S	--	--	--	--	--	--	--	--	--
PSY-S	--	--	--	--	--	--	--	--	.38*
HPR-S	--	--	.51**	--	.60**	-.47**	--	.44**	--
SSK-S	--	--	--	--	--	--	--	--	--

Note: CD=Cognitive Development, NI=Normal Irritability, SD School Disturbance,
 LNA=Low Need Achievement, AGG=Aggression, ANX=Anxiety, HI=Hostile Isolation,
 EXT=Extraversion, TD=Total Disability.

^acorrelation not significant, *p < .05, **p < .01

Table 5

Test-Retest Reliability of Revised Format PIC Scales in a Preschool Sample ($n = 31$)

Scale	First Test		Second Test		t	r_{tt}	SE	% Agreement, Clinical versus Normal Range
	M	SD	M	SD				
I	57.0	15.2	53.8	15.8	.05	.89	5.04	93.5
II	59.4	15.2	59.0	14.6	--	.90	4.81	87.1
III	58.3	15.5	55.7	16.5	--	.77	7.43	87.1
IV	66.7	17.1	65.4	18.0	--	.92	4.84	90.3
L	52.1	10.6	54.5	12.9	--	.81	4.62	87.1
F-S	64.5	20.6	61.2	20.4	--	.86	7.71	96.8
DEF-S	46.7	8.8	45.6	10.5	--	.31	7.30	90.3
ADJ-S	62.0	17.7	58.7	19.8	.05	.91	5.31	90.3
ACH-S	66.3	19.5	60.3	14.3	.01	.81	8.50	80.7
IS-S	61.9	15.4	60.1	17.2	--	.83	6.35	90.3
DVL	58.9	14.7	56.5	13.6	--	.86	5.50	83.9
SOM-S	58.5	12.8	54.9	11.4	--	.59	8.20	74.2
D-S	59.4	19.6	57.2	18.8	--	.89	6.50	93.5
FAM-S	60.0	15.5	60.9	17.0	--	.92	4.38	93.5
DLQ-S	60.3	17.4	54.7	17.1	.05	.78	8.16	93.5
WDL-S	57.6	17.2	58.2	15.9	--	.90	5.44	96.8
ANX-S	54.6	14.9	51.9	15.4	--	.80	6.66	80.7
PSY-S	65.2	23.6	64.0	21.4	--	.89	7.83	90.3
HPR-S	52.2	13.0	51.3	15.5	--	.81	5.67	87.1
SSK-S	55.1	13.9	54.0	16.7	--	.90	4.40	100.0

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